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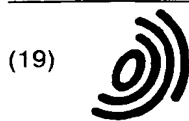
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(11) **EP 0 825 893 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
16.08.2001 Bulletin 2001/33

(21) Application number: **96918270.8**

(22) Date of filing: **05.06.1996**

(51) Int Cl.7: **A63C 17/00, A43B 3/26**

(86) International application number:
PCT/US96/09332

(87) International publication number:
WO 96/40391 (19.12.1996 Gazette 1996/55)

(54) **ADJUSTABLE FIT IN-LINE SKATE**

GRÖSSENEINSTELLBARER EINSPURIGER ROLLSCHUH

PATIN A ROULETTES EN LIGNE DE TAILLE AJUSTABLE

(84) Designated Contracting States:
AT DE ES FR GB IT
Designated Extension States:
SI

(30) Priority: **07.06.1995 US 477181**

(43) Date of publication of application:
04.03.1998 Bulletin 1998/10

(60) Divisional application:
00203670.5 / 1 066 862

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WO-A-94/14350

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This invention pertains to skates such as in-line skates and the like. More particularly, this invention pertains to such a skate which may accommodate a variety of shoe sizes.

2. Description of the Prior Art

[0002] In recent years, the sport of in-line skating has enjoyed a tremendous growth in popularity. In addition to being enjoyable exercise for adults, children have participated in in-line skating.

[0003] High quality in-line skates can be expensive. The expense is particularly frustrating for parents of young children. As the children grow, their foot sizes expand necessitating frequent replacement of footwear of any type including recreational footwear such as in-line skates.

[0004] In the past, in-line skate manufacturers have accommodated growth in foot size by having an oversized molded boot containing a replaceable liner. Liners of various wall thicknesses could be provided such that the liners could be replaced to accommodate different foot sizes. Alternatively, various techniques have been provided for permitting the boot of the skate to adjust to accommodate growth in foot size. However, such techniques have commonly been lacking in providing for a construction which is secure after adjustment and without impairing performance of the skate. Document WO-A-9 414 350 discloses the preamble features of claim 1 and in particular an adjustable fit in-line skate which is mounted on a sole plate part that is connected to a girder profile extending essentially over the whole of sole. The girder profile has a shape of an upside down U and allows the inserting and screwing of additional parts such as wheel forks. The shoe of the in-line skate has also a stiffening element on its back and the rear shell of the shoe has a flexure area which is created by a corresponding recess. The girder profile, with respect to which a rear section and a front section of the shoe are fixable, is provided with longitudinal slots on its horizontal section by means of which the rear section and the front section of the shoe are movable in a longitudinal direction relatively to the girder profile, providing for an adjustable in-line skate.

II. SUMMARY OF THE INVENTION

[0005] According to the present invention which is described in claim 1, an adjustable fit in-line skate is provided having a rigid frame with a plurality of in-line skate wheels secured to the frame. A boot is secured to the frame with the boot having a toe portion and a heel por-

tion. The heel portion includes a sole and the heel portion is fixed to the frame. The toe portion has a base and is fastened to the heel portion by means which releasably secure each of the base and the sole to at least a portion of the frame. The toe portion is slidable relative to the heel portion along a line of travel which is generally parallel to the longitudinal dimension of the skate. The toe portion may be fixed at any one of a plurality of fixed positions along the line of travel.

III. BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Fig. 1 is a front, right and top perspective view of the skate of the present invention;

Fig. 2 is an exploded perspective view of a liner for use with the skate of Fig. 1;

Fig. 3 is a right side elevation view of the skate of Fig. 1 shown adjusted to a minimum foot size adjustment;

Fig. 4 is a left side elevation view of the skate of Fig. 1;

Fig. 5 is a front elevation view of the skate of Fig. 1;

Fig. 6 is a rear elevation view of the skate of Fig. 1;

Fig. 7 is a top plan view of the skate of Fig. 1;

Fig. 8 is a bottom plan view of the skate of Fig. 1;

Fig. 9 is the view of Fig. 3 separately shown to compare with Fig. 10;

Fig. 10 is the view of Fig. 9 with the skate adjusted to a maximum foot size adjustment;

Fig. 11 is an exploded perspective view of the skate of Fig. 1 (without showing a liner);

Fig. 12 is a side sectional view of a toe portion of the skate of Fig. 1;

Fig. 13 is an enlarged view of a heel portion of the skate of Fig. 1 (with a cuff shown in phantom and without showing a frame); and

Fig. 14 is a view taken along line 14-14 of Fig. 13.

IV. DESCRIPTION OF THE PREFERRED EMBODIMENT

[0007] With reference now to the various drawing figures in which identical elements are numbered identically throughout, a description of the preferred embodiment of the present invention will now be provided.

[0008] In the various figures, an in-line skate 10 is illustrated having a skate boot 12 secured to a frame 14 and containing a liner 110. The frame 14 carries a plurality of wheels 16 which, in an in-line skate, are arranged in a line. Also, the frame carries a resilient brake pad 18 as is conventional.

[0009] Shown best in Fig. 11, the frame 14 includes two halves 14a, 14b. The frame halves 14a, 14b are slidably joined at offset and overlapping front tongues 20a, 20b (having holes 23) and rear tongues 22a, 22b (having holes 24). Holes 23 are in alignment when the

halves 14a, 14b are joined. Holes 24 are similarly aligned when the halves 14a, 14b are joined. When the halves 14a, 14b are joined together, flat rear upper surfaces 26 of the halves 14a, 14b are in generally planar alignment to define a rear support platform. Upper surface 27 in the toe area of the frame defines a front support platform when the halves 14a, 14b are joined. As shown in Fig. 12, surfaces 27 are arcuate to mate with a base 76 to toe portion 34 as will be described.

[0010] Referring back to Fig. 11, the boot 12 includes a heel portion 30, cuff 32, toe portion 34 and tongue 36. The heel portion 30 includes a sole 40 and a raised heel wall 42 having sidewalls 44, 46 each with holes 48, 50. The heel wall 42 surrounds the heel and lower ankle of the wearer with wall 46 being raised on the inside of the foot to provide additional support 41 for the arch of the user.

[0011] The sole 40 includes a hole 52 formed in a recess 54 at a heel end of sole 40. Similarly, at a toe end of the sole 40, a hole 56 is provided between two ramped surfaces 58. The base or sole 40 is sized to rest on the rear support platform 26 and the front support platform 28 with hole 52 aligned with holes 24 and with hole 56 aligned with holes 23. A bolt 60 is sized to be passed through hole 52 with the head end of the bolt received within the recess 54 and with the bolt 60 further passing through holes 24 and secured by a nut 62. Similarly, a bolt 64 having a head 66 sized to be received between ramped surfaces 58 is provided with the bolt 64 passing through hole 56 and aligned holes 23 and received within an elongated nut 68. As can be seen, since holes 52, 56 are approximately equal to the diameter of bolts 60, 64, once the heel portion 30 is secured to the frame 14, the heel portion 30 is restricted from movement relative to the frame 14.

[0012] The toe portion 34 includes a toe box having sidewalls 70, 72 and a top wall 74. Further, as shown in Fig. 12, toe portion 34 has a bottom wall 76. The bottom wall 76 is provided with an elongated slot 78 extending in a longitudinal dimension of the skate to pass the bolt 64. When assembled with the heel portion 30, the toe portion 34 is provided with the base 76 in underlying relation relative to the sole 40 of the heel portion 30. Further, the sidewalls 70, 72 are positioned in overlying relation to the exterior surfaces of the sidewalls 44, 46 of the heel portion 30. The sidewalls 70, 72 are provided with elongated slots 75, 77 aligned with holes 48, 50, respectively. With the construction thus described, upon loosening of elongated nut 68 (by use of an Allen wrench received in hole 69 -- see Fig. 12), the toe portion 34 may move along a line of travel which is generally parallel to the longitudinal dimension of the skate. The slots 75, 77 are aligned such that throughout the path of travel, the slots 75, 77 remain aligned with holes 48, 50.

[0013] The cuff 32 is provided to surround an upper ankle area of the wearer and surrounding the heel portion 42 as well as the rearward ends of the sidewall 70, 72. The cuff 32 has at its lower end pivot locations 80,

82 having holes 84, 86 aligned with holes 48, 50. A recessed area 88 surrounds hole 84. Although not shown, an identical recessed area surrounds hole 86.

[0014] The attachment of the ends 80, 82 at holes 48, 50 is identical for both sides of the skate and a description with respect to end 80 will suffice as a description of end 82. The attachment is best shown in Figs. 13 and 14 where a plug 90 (shown partially in phantom) is provided sized to be received within the recess 88 and with a sleeve 91 having an internal thread passed through hole 84, slot 76 and hole 48. A threaded bolt 92 is threaded into the interior of the sleeve 91. This method of attachment permits pivoting movement of the cuff 32 relative to the heel 30 and toe 34. Further, the connection permits relative sliding movement of the toe 34 relative to the heel portion 30 upon the loosening of nut 68.

[0015] A conventional buckle arrangement having a release fastener 96 secured to one side of cuff 32 and a tensioning buckle and strap 98 secured to the opposite side of cuff 32 is provided to permit the cuff 32 to be securely fastened to the leg of a wearer. Similarly, a like buckle arrangement having a tension strap and buckle 97 and a release fastener 102 are provided on opposite sides 70, 72 of the toe portion 34 to securely fasten the instep of the wearer's foot to the boot 12. Finally, a tongue 36 is provided as is conventional.

[0016] With the construction thus described, a wide variety of foot sizes can be accommodated by simply loosening nut 68 such that the toe portion 34 is moved relative to the heel portion 30. About four different foot sizes can be achieved by permitting a stroke of movement equal to about one inch. Accordingly, the slots 76, 78 will have a length of about one inch. Since a sliding adjustment is provided, unique adjustment is possible to accommodate unique foot sizes within a range between a minimum foot size (Fig. 9) and a maximum foot size (Fig. 10). Further, the foregoing design permits the use of a pivoting cuff 32 which has numerous advantages in the performance of in-line skating. Also, throughout the adjustment of the length, the positioning of the user's heel relative to the frame 14 and wheels 16 remains unchanged which presents a significant advantage in the performance of in-line skating since heel positioning is important to the performance of the skate.

[0017] The present invention also utilizes a novel construction of a liner 110 (Fig. 2) to accommodate increases in shoe size. The use of resilient liners in in-line skates is well known. The present liner 110 includes a toe portion 112 joined to the main body portion 114 by an expandable resilient section 116 positioned surrounding the instep area of the foot. Accordingly, the toe portion 112 may move relative to the main body portion 114. A lug 117 is provided on the toe portion 112. The lug 117 is secured to the upper wall 74 of the boot toe 34 by passing the lug 117 through a hole 118 formed in the upper surface 74 and securing the lug 117 in said position by a bolt or screw 120 (Fig. 12). The area surrounding the hole 118 is provided with a recess 121 to

receive a decorative cap 122. Accordingly, as a user adjusts the size of the boot by expanding the toe portion 34 of the boot, the toe 112 of the skate liner 110 follows the toe 34 of the boot 12.

[0018] From the foregoing detailed description of the present invention, it has been shown how the objects of the invention have been attained in the preferred manner. However, modifications and equivalents of the disclosed concepts such as those which readily occur to one skilled in the art are intended to be included within the scope of the claims which are appended hereto.

Claims

1. An adjustable fit in-line skate (10) comprising:

a rigid frame (14) having a plurality of in-line skate wheels (16) secured thereto;
a boot (12) including a toe portion (34) and a rear portion;

said rear portion including a heel portion (30) having a sole (40) and including a cuff portion (32) with sidewalls,
said toe portion (34) having a base (76) in sliding relation to said sole (40), said toe portion (34) including toe fastening means for fastening said toe portion (34) to said heel portion (30), said fastening means including means for securing said base (76) to at least a portion of said frame (14) with said toe portion (34) slidable relative to said heel portion (30) along a line of travel generally parallel to a longitudinal dimension of said skate (10)

characterized in that said toe portion (34) includes sidewalls (70;72), having slide means connected to said sidewalls of said cuff portion (32) by a fastener, said slide means accommodating movement of said toe portion sidewalls (70;72) relative to said sidewalls of said cuff portion (32) along said line of travel, and in that said heel portion (30) includes heel for fastening means fastening said heel portion (30) to said frame (14) at a predetermined fixed location relative to said frame (14).

2. A skate according to claim 1 wherein said fastener pivotally connects said cuff portion (32) to said heel portion (30).

3. A skate according to claim 1 wherein said frame (14) includes a front platform (28) and a rear platform (26), wherein said sole (40) of said heel (30) is secured to said rear platform (26) and wherein each of said base (76) and said sole (40) are secured to said front platform (28).

4. A skate according to claim 3 wherein said toe fas-

tening means includes a base fastener (64) passing through each of said sole (40) and said base (76), said base fastener (64) being operable by a user to adjust said base fastener (64) between a fastened position and an unfastened position, said sole (40) and said base (76) fixed from movement relative to said base fastener (64) in said fastened position and said base (76) free to move along said line of travel relative to said base fastener (64) in said unfastened position.

5. A skate according to claim 1 wherein

said cuff portion (32) with sidewalls is pivotally secured to opposite sides of said heel portion (30) by a pivot and fastening means, said toe portion (34) including sidewalls (70;72) having slide means connected to said pivot and fastening means with said slide means accommodating movement of said toe portion sidewalls (70;72) relative to said cuff portion (32) and said heel portion (30) along said line of travel.

6. A skate according to claim 1 or 5 wherein said cuff portion (32) includes an open front with a first buckle (98) for drawing said cuff portion sidewalls together to at least partially close said open front.

7. A skate according to claim 6 wherein said toe portion (34) includes an open top between said toe portion sidewalls (70;72) with a second buckle (97) for drawing said toe portion sidewalls (70;72), together to at least partially close said open top.

8. A skate according to claim 1 further comprising: a cushioned liner (110) sized to be received within said boot (12), said liner (110) having a heel end and a toe end, said liner (110) sized for said toe end to be received within said toe portion (34) and said heel end to be received within said heel portion (30), said toe end and said heel end separated by an elastic region (116) for said toe end to be moved away from said heel end against a bias of said elastic region (116) in response to a force urging said toe end and said heel end apart.

9. A skate according to claim 8 wherein said toe end of said liner (110) includes means for fastening said toe end to said toe portion (34) for said toe end to move with said toe portion (34) along said line of travel.

10. A skate according to claim 1 wherein (30) said toe fastening means including only a single first fastener (64) for releasably securing said base (76) to said frame (14) with said toe portion (34) slidable relative to said heel portion (30) along a line of travel generally parallel to a longitudinal dimension of said skate;

slide means operably connecting said side-walls (70,72) of said toe portion (34) to opposite sides of said heel portion (30) by a second fastener, said slide means accommodating movement of said toe portion (34) relative to said heel portion (30) along said line of travel.

11. The skate according to claim 10 wherein said second fastener pivotally connects said cuff portion (32) to said heel portion (30).
12. The skate according to claim 10 wherein said heel portion (30) is connected, at a predetermined fixed point, to said frame (14) by said fastening means to prevent longitudinal adjustment of said heel portion (30) relative to said frame (14).

Patentansprüche

1. Größeneinstellbarer, einspuriger Rollschuh (10), mit:

einem starren Rahmen (14) mit einer Mehrzahl daran befestigter in einer Spur angeordneter Rollschuhräder (16),
einem Schuh (12) mit einem Zehenteil (34) und einem hinteren Teil,
wobei der hintere Teil einen Fersenabschnitt (30) mit einer Sohle (40) aufweist und einen Stulpenabschnitt (32) mit Seitenwänden umfasst,
wobei der Zehenteil (34) eine bezüglich der Sohle (40) gleitend verschiebbare Basis (76) aufweist, und der Zehenteil (34) Zehenbefestigungsmittel zum Befestigen des Zehenteils (34) an dem Fersenabschnitt (30) umfasst, wobei die Befestigungsmittel Mittel zum lösbaren Befestigen der Basis (76) an zumindest einem Abschnitt des Rahmens (14) umfassen, wobei der Zehenteil (34) relativ zu dem Fersenabschnitt (30) entlang eines im Wesentlichen zu einer Längsabmessung des Rollschuhs (10) parallelen Verschiebeweges gleitend verschiebbar ist, dadurch gekennzeichnet, dass der Zehenteil (34) Seitenwände (70; 72) mit einer Gleiteinrichtung aufweist, die mittels eines Befestigungselementes mit den Seitenwänden des Stulpenabschnitts (32) verbunden ist, wobei die Gleiteinrichtung eine Bewegung der Zehenteilseitenwände (70; 72) relativ zu den Seitenwänden des Stulpenabschnitts (32) längs des Schiebeweges akkommodiert, und dass der Fersenabschnitt (30) Fersenbefestigungsmittel zum Befestigen des Fersenabschnitts (30) an dem Rahmen (14) an einer vorbestimmten, festen Stelle relativ zu dem Rahmen (14) aufweist.

2. Rollschuh nach Anspruch 1, bei dem das Befestigungselement den Stulpenabschnitt (32) schwenkbar mit dem Fersenabschnitt (30) verbindet.
3. Rollschuh nach Anspruch 1, bei dem der Rahmen (14) eine vordere Plattform (28) und eine hintere Plattform (26) aufweist, wobei die Sohle (40) des Fersenabschnitts (30) an der hinteren Plattform (26) befestigt ist, und wobei sowohl die Basis (76) als auch die Sohle (40) an der vorderen Plattform (28) befestigt sind.
4. Rollschuh nach Anspruch 3, bei dem die Zehenbefestigungsmittel ein Basis-Befestigungselement (64) aufweisen, dass sich durch die Sohle (40) und die Basis (76) erstreckt, wobei das Basis-Befestigungselement (64) von einem Benutzer betätigbar ist, um das Basis-Befestigungselement (64) zwischen einer Befestigungsstellung und einer Lösestellung einzustellen, wobei die Sohle (40) und die Basis (76) in der Befestigungsstellung gegenüber einer Bewegung relativ zu dem Basis-Befestigungselement (64) gesperrt sind und die Basis (76) in der Lösestellung frei ist, sich relativ zu dem Basis-Befestigungselement (64) längs dem Verschiebeweg zu bewegen.
5. Rollschuh nach Anspruch 1, bei dem der Stulpenabschnitt (32) mit Seitenwänden durch ein Drehgelenk und Befestigungsmittel schwenkbar an entgegengesetzten Seiten des Fersenabschnitts (30) befestigt ist, wobei der Zehenteil (34) Seitenwände (70; 72) mit einer Gleiteinrichtung aufweist, die mit dem Drehgelenk und den Befestigungsmitteln verbunden ist, so dass die Gleiteinrichtung eine Bewegung der Zehenteilseitenwände (70; 72) längs des Verschiebeweges relativ zum Stulpenabschnitt (32) und zum Fersenabschnitt (30) akkommodiert.
6. Rollschuh nach Anspruch 1 oder 5, bei dem der Stulpenabschnitt (32) eine offene Vorderseite mit einer ersten Schnalle (98) zum Zusammenziehen der Stulpenabschnittseitenwände aufweist, um die offene Vorderseite zumindest teilweise zu schließen.
7. Rollschuh nach Anspruch 6, bei dem der Zehenteil (34) eine offene Oberseite zwischen den Zehenteilseitenwänden (70; 72) mit einer zweiten Schnalle (97) zum Zusammenziehen der Zehenteilseitenwände (70; 72) aufweist, um die offene Oberseite zumindest teilweise zu schließen.
8. Rollschuh nach Anspruch 1, ferner umfassend: einen gepolsterten Innenschuh (110) einer Größe, die in den Schuh (12) paßt, wobei der Innenschuh (110) ein Fersenende und ein Zehenende hat, wobei der Innenschuh (110) bezüglich des Zehenendes eine

Größe hat, die in dem Zehenteil (34) aufgenommen werden kann, und bezüglich des Fersenendes eine Größe hat, die in dem Fersenabschnitt (30) aufgenommen werden kann, wobei das Zehenende und das Fersenende durch einen elastischen Bereich (116) voneinander getrennt sind, um das Zehenende von dem Fersenende gegen eine Vorspannung des elastischen Bereiches (116) als Reaktion auf eine das Zehenende und das Fersenende auseinanderdrückende Kraft voneinander weg bewegen zu können.

9. Rollschuh nach Anspruch 8, bei dem das Zehenende des Innenschuhs (110) Mittel zum Befestigen des Zehenendes an dem Zehenteil (34) umfasst, so dass das Zehenende sich mit dem Zehenteil (34) entlang des Verschiebeweges bewegt.
10. Rollschuh nach Anspruch 1, bei dem die Zehenbefestigungsmittel nur ein einziges erstes Befestigungselement (64) zum lösbaren Befestigen der Basis (76) an dem Rahmen (14) umfassen, wobei der Zehenteil (34) relativ zu dem Fersenabschnitt (30) entlang eines im Wesentlichen zu einer Längsabmessung des Rollschuhs parallelen Verschiebeweges gleitend verschiebbar ist,
 - eine Gleiteinrichtung die Seitenwände (70, 72) des Zehenteils (34) durch ein zweites Befestigungselement betriebsmäßig mit entgegengesetzten Seiten des Fersenabschnitts (30) verbindet, wobei die Gleiteinrichtung eine Bewegung des Zehenteils (34) relativ zu dem Fersenabschnitt (30) längs des Verschiebeweges akkommodiert.
11. Rollschuh nach Anspruch 10, bei dem das zweite Befestigungselement den Stulpenabschnitt (32) schwenkbar mit dem Fersenabschnitt (30) verbindet.
12. Rollschuh nach Anspruch 10, bei dem der Fersenabschnitt (30) an einem vorbestimmten festen Punkt durch die Befestigungsmittel mit dem Rahmen (14) verbunden ist, um eine Längsverstellung des Fersenabschnitts (30) relativ zu dem Rahmen (14) zu verhindern.

Revendications

1. Patin à roulettes en ligne de taille ajustable (10) comprenant :
 - un châssis rigide (14) ayant une pluralité de roues (16) en ligne de patin fixées à celui-ci ;
 - une chaussure (12) comprenant une partie d'orteil (34) et une partie arrière ;
 - ladite partie arrière comprenant une partie de talon (30) muni d'une semelle (40) et compre-

nant une partie de cheville (32) avec des parois latérales ;

- ladite partie d'orteil (34) ayant une base (76) en relation de glissement avec ladite semelle (40), ladite partie d'orteil (34) comprenant des moyens de fixation pour fixer ladite partie d'orteil (34) à ladite partie de talon (30), lesdits moyens de fixation comprenant des moyens pour fixer de façon amovible ladite base (76) à au moins une partie dudit châssis (14), ladite partie d'orteil (34) pouvant glisser par rapport à ladite partie de talon (30) le long d'une ligne de déplacement généralement parallèle à la dimension longitudinale dudit patin (10),
- **caractérisé en ce que** ladite partie d'orteil (34) comprend des parois latérales (70, 72) ayant des moyens de glissement connectés auxdites parois latérales de ladite partie de cheville (32) par un dispositif de fixation, lesdits moyens de glissement s'accommodant des mouvements desdites parois latérales de la partie d'orteil (70, 72) par rapport auxdites parois latérales de ladite partie de cheville (32) le long de ladite ligne de déplacement et en ce que ladite partie de talon (30) comprend des moyens de fixation de talon pour fixer ladite partie de talon (30) audit châssis (14) en un emplacement fixé prédéterminé par rapport audit châssis (14).

2. Patin selon la revendication 1, dans lequel ledit dispositif de fixation connecte de façon pivotante ladite partie de cheville (32) à ladite partie de talon (30).
3. Patin selon la revendication 1, dans lequel ledit châssis (14) comprend une plate-forme avant (28) et une plate-forme arrière (26), dans lequel ladite semelle (40) dudit talon (30) est fixée à ladite plate-forme arrière (26) et dans lequel ladite base (76) et ladite semelle (40) sont fixées à ladite plate-forme avant (28).
4. Patin selon la revendication 3, dans lequel lesdits moyens de fixation comprennent un dispositif de fixation de base (64) passant à travers ladite semelle (40) et ladite base (76), ledit dispositif de fixation de base (64) pouvant être actionné par un utilisateur pour ajuster ledit dispositif de fixation de base (64) entre une position attachée et une position détachée, ladite semelle (40) et ladite base (76) étant fixées ou empêchées de se déplacer par rapport audit dispositif de fixation de base (64) dans ladite position attachée et ladite base (76) étant libre de se déplacer le long de ladite ligne de déplacement par rapport audit dispositif de fixation de base (64) dans ladite position détachée.
5. Patin selon la revendication 1, dans lequel ladite partie de cheville (32) étant munie de parois latérales

- les (13) fixées de façon pivotante aux côtés opposés de ladite partie de talon (30) par des moyens de pivotement et d'attache, ladite partie d'orteil (34) comprenant des parois latérales (70, 72) ayant des moyens de glissement connectés auxdits moyens de pivotement et d'attache, lesdits moyens de glissement s'accommodant du mouvement desdites parois latérales de la partie d'orteil (70, 72) par rapport à ladite partie de cheville (32) et ladite partie de talon (30) le long de ladite ligne de déplacement.
- 5
6. Patin selon la revendication 1 ou 5, dans lequel ladite partie de cheville (32) comprend une ouverture frontale avec une première boucle (98) pour amener ensemble lesdites parois latérales de la partie de cheville de façon à au moins partiellement refermer ladite ouverture frontale.
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7. Patin selon la revendication 6, dans lequel ladite partie d'orteil (34) comprend un sommet ouvert entre lesdites parois latérales (70, 72) de la partie d'orteil, avec une deuxième boucle (97) pour amener ensemble lesdites parois latérales (70, 72) de la partie d'orteil afin d'au moins partiellement refermer ledit sommet ouvert.
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- 20
8. Patin selon la revendication 1, comprenant en outre : une garniture capitonnée (110) dimensionnée pour être reçue dans ladite chaussure (12), ladite garniture (110) ayant une extrémité de talon et une extrémité d'orteil, ladite garniture (110) étant dimensionnée pour que ladite extrémité d'orteil soit reçue dans ladite partie d'orteil (34) et pour que ladite extrémité de talon soit reçue dans ladite partie de talon (30), ladite extrémité d'orteil et ladite extrémité de talon étant séparées par une région élastique (116) afin que ladite extrémité d'orteil soit éloignée de ladite extrémité de talon à l'encontre de la sollicitation de ladite région élastique (116), en réponse à une force tendant à éloigner ladite extrémité d'orteil de ladite extrémité de talon.
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- 30
- 35
- 40
9. Patin selon la revendication 8, dans lequel ladite extrémité d'orteil de ladite garniture (110) comprend des moyens pour fixer ladite extrémité d'orteil à ladite partie d'orteil (34) afin que ladite extrémité d'orteil se déplace avec ladite partie d'orteil (34) de long de ladite ligne de déplacement.
- 45
10. Patin selon la revendication 1, dans lequel lesdits moyens de fixation d'orteil comprennent seulement un premier dispositif de fixation unique (64) pour fixer de façon amovible ladite base (76) audit châssis (14), ladite partie d'orteil (34) pouvant glisser par rapport à ladite partie de talon (30) le long d'une ligne de déplacement généralement parallèle à la dimension longitudinale dudit patin ; des moyens de glissement connectant de façon opérationnelle les-
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- 55
- dites parois latérales (70, 72) de ladite partie d'orteil (34) aux côtés opposés de ladite partie de talon (30) par un deuxième dispositif de fixation, lesdits moyens de glissement s'accommodant du mouvement de ladite partie d'orteil (34) par rapport à ladite partie de talon (30) le long de ladite ligne de déplacement.
11. Patin selon la revendication 10, dans lequel ledit deuxième dispositif de fixation connecte de façon pivotante ladite partie de cheville (32) à ladite partie de talon (30).
12. Patin selon la revendication 10, dans lequel ladite partie de talon (30) est connectée, en un point fixé prédéterminé, audit châssis (14) par lesdits moyens de fixation afin d'empêcher un ajustement longitudinal de ladite partie de talon (30) par rapport audit châssis (14).

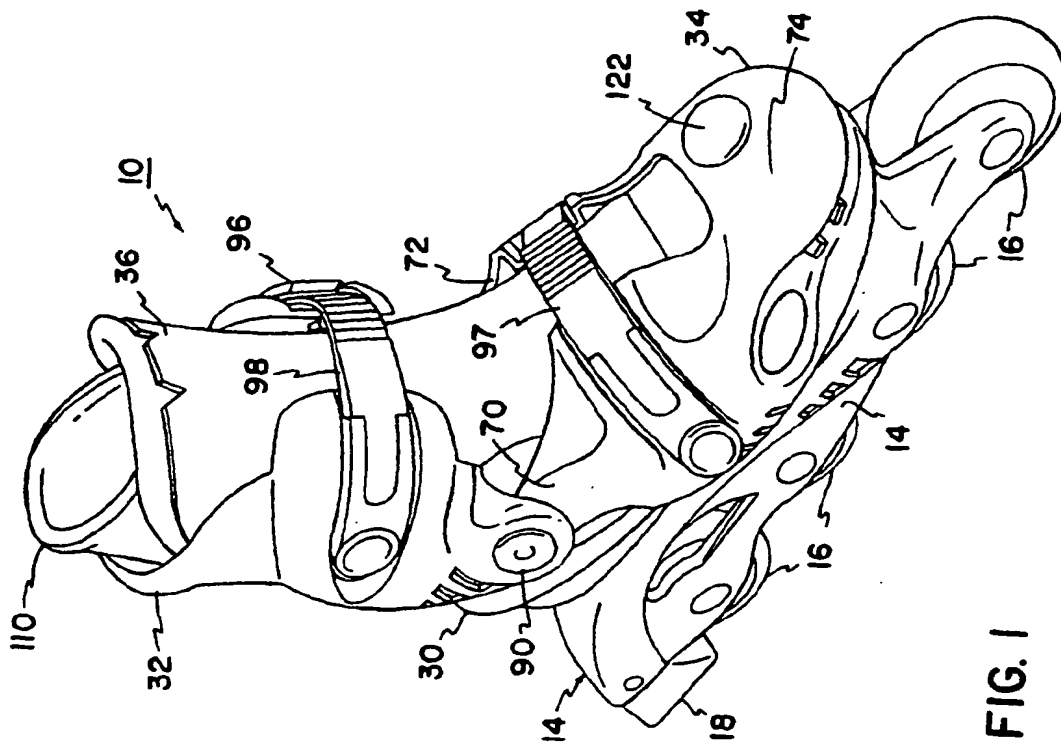


FIG. 1

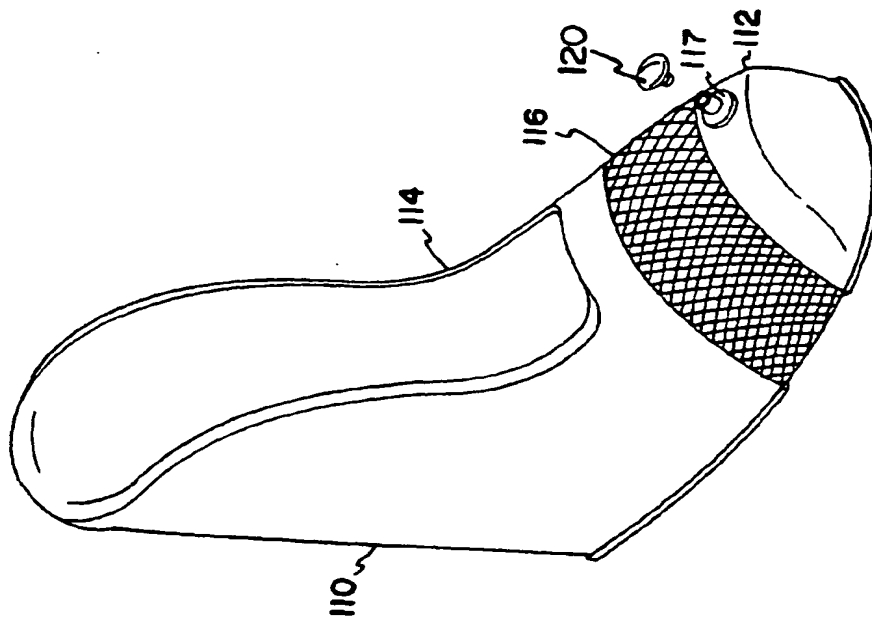
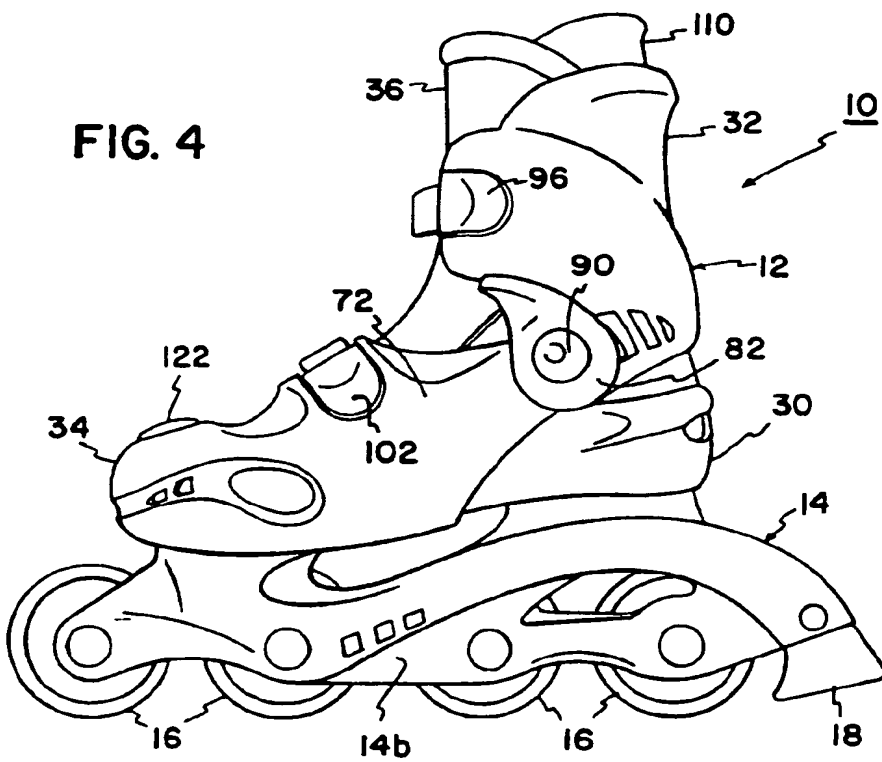
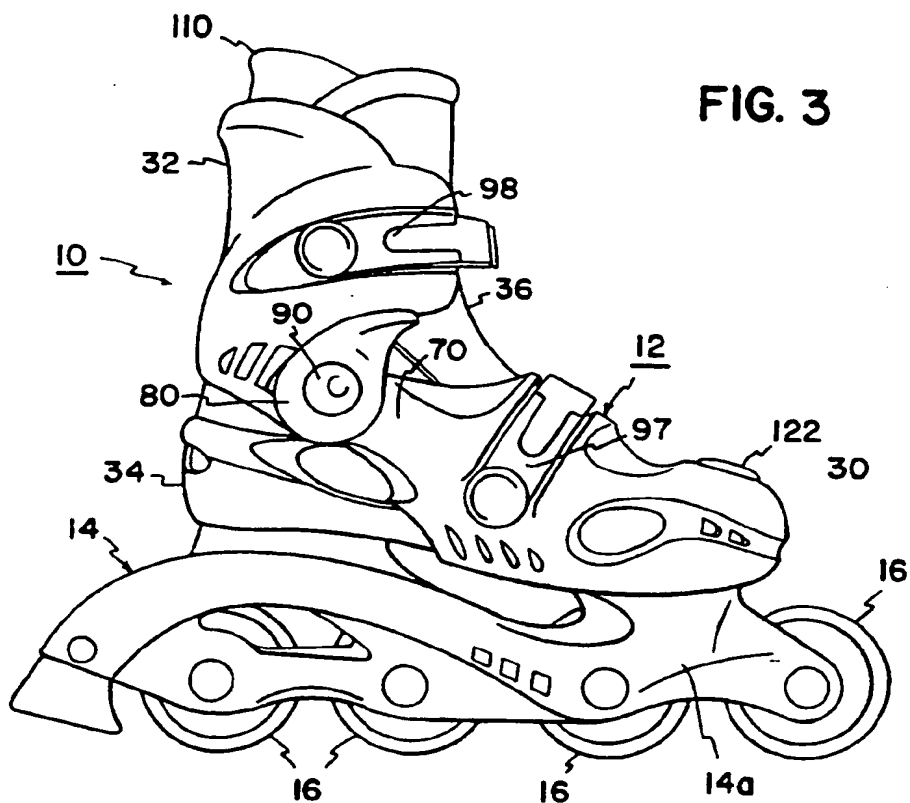


FIG. 2



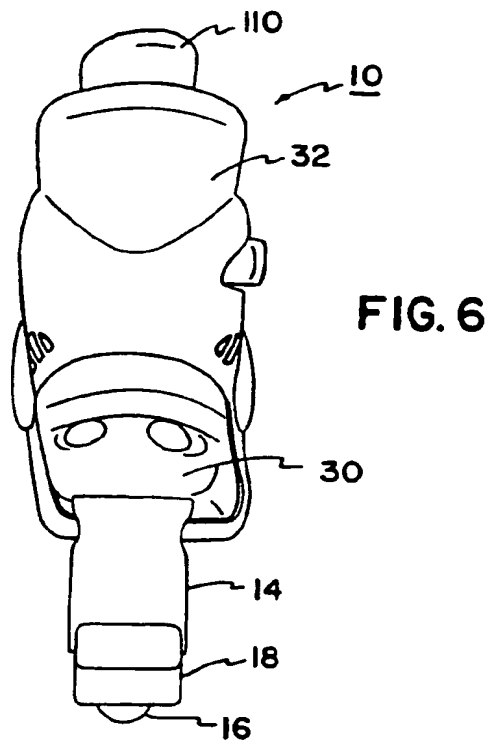
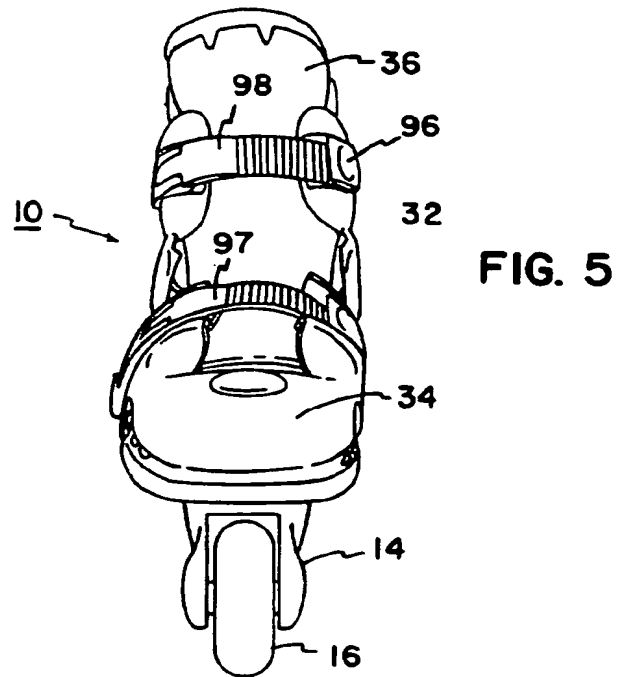


FIG. 7

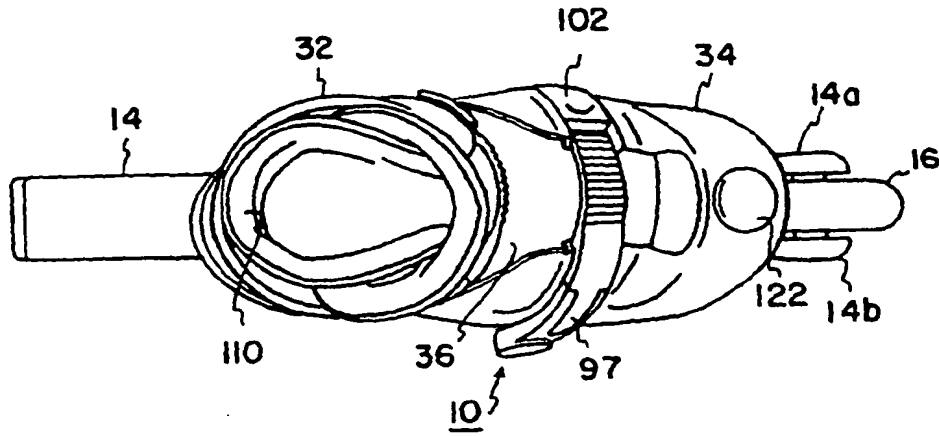
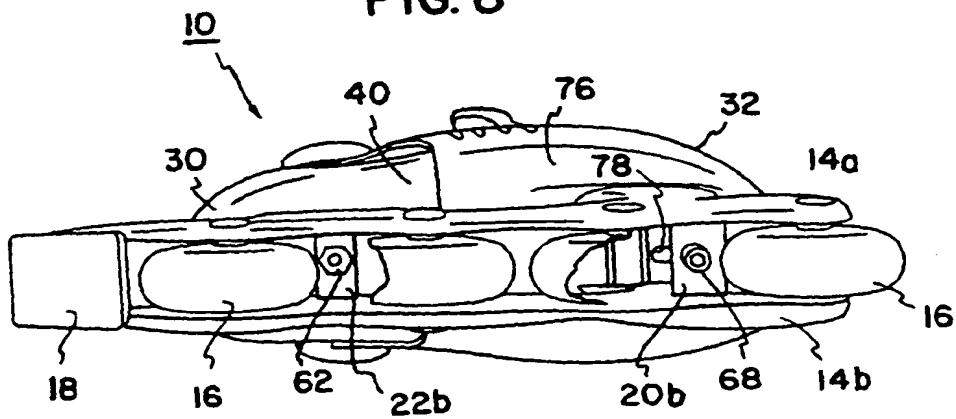


FIG. 8



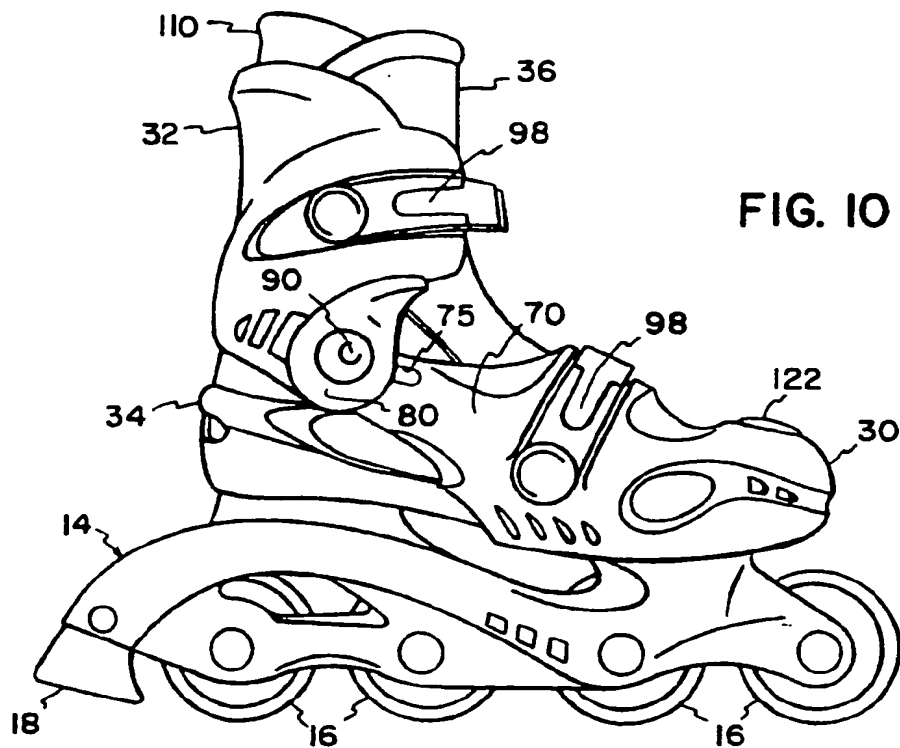
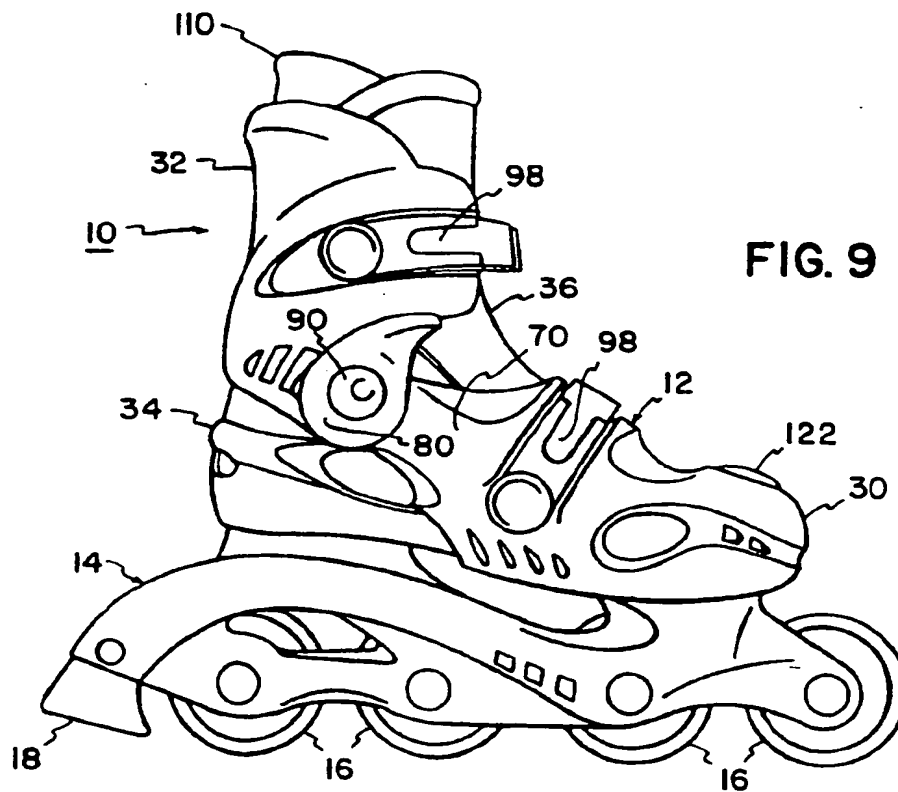


FIG. 11

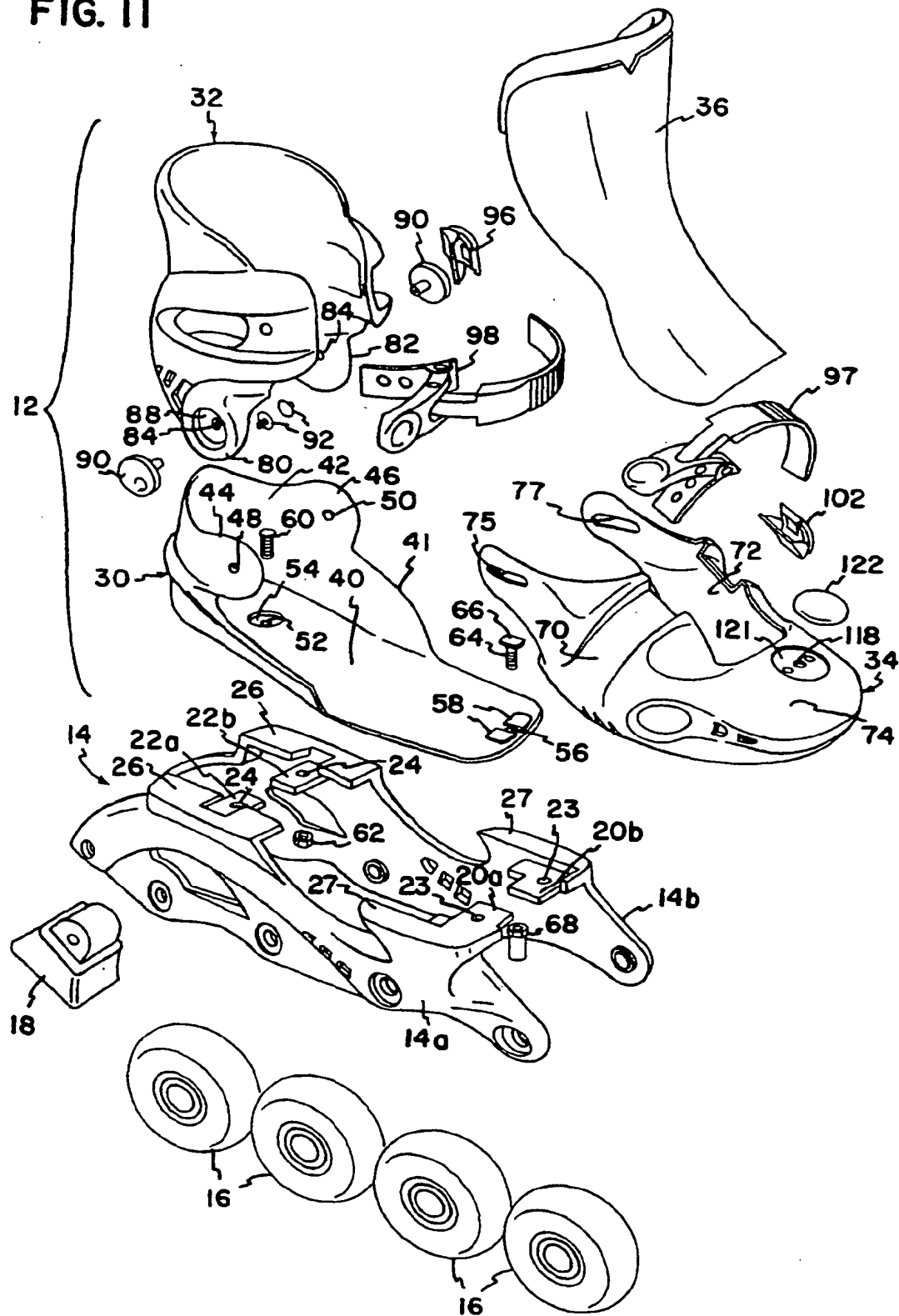
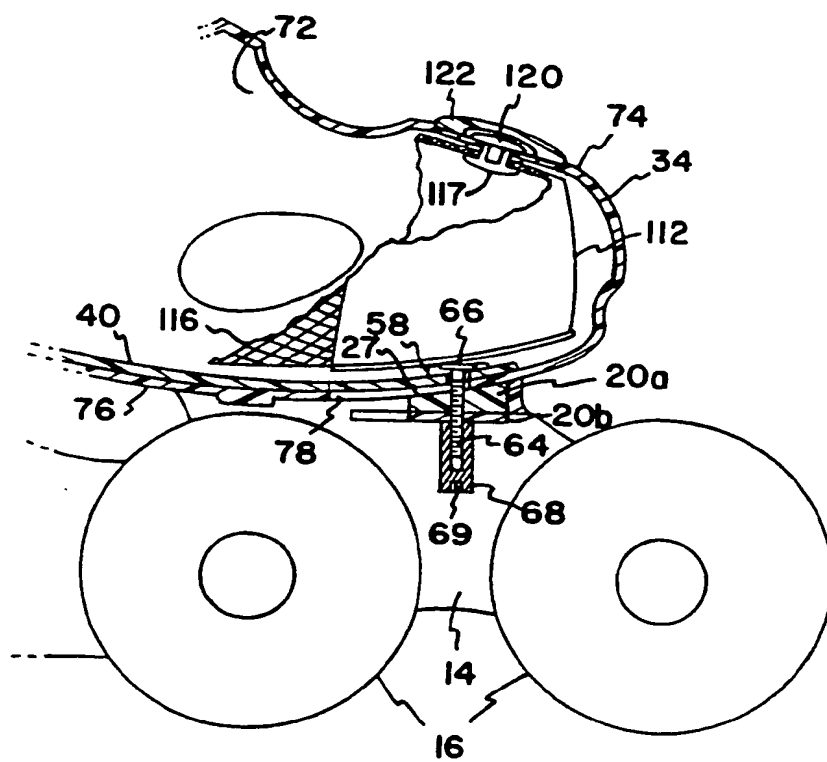


FIG. 12



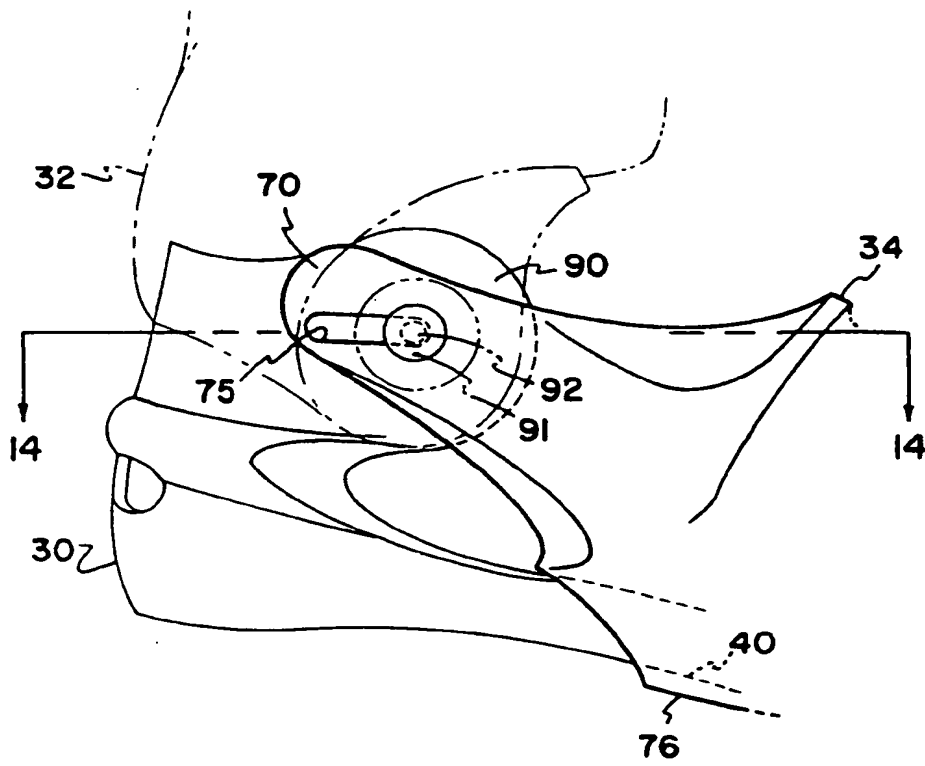


FIG. 13

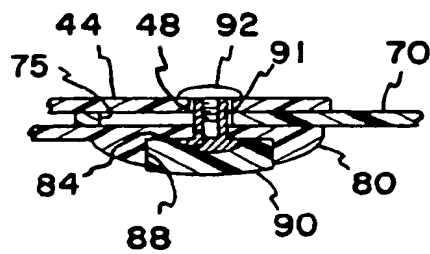


FIG. 14